FULLY INTEGRATED LIFECYCLE MISSION SUPPORT SERVICES (FILMSS)

FOR
AMES RESEARCH CENTER (ARC)

Statement of Work

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National Aeronautics and Space Administration
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1.0 INTRODUCTION

The NASA Ames Research Center (ARC) develops and manages programs, projects, and technologies that support NASA's science, exploration, and aeronautics goals, with a focus on innovation. Currently Ames supports a variety of mission types and programs, including planetary science, astrophysics, space biosciences, astrobiology, heliophysics, and earth science missions; small satellite missions; technology development; aeronautics research; and collaborative science programs.

This Statement of Work (SOW) describes the requirements for supporting multiple sustained project management, research, and technology development capabilities for Ames Research Center that encompass all phases of mission and project lifecycles for flight programs and projects, as well as support for various other programs and functional offices at Ames.

2.0 SCOPE

This contract will provide program and project management support for such efforts as International Space Station (ISS) biosciences flight development projects (e.g., mission implementation, instrument development, and technology advancement efforts), collaborative science programs (e.g., astrobiology, virtual institutes), aeronautics research projects, and various Ames offices.

There are two major parts of the FILMSS contract: core elements and IDIQ (indefinite delivery/indefinite quantity) task orders. The core elements consist of work that will commence after phase-in is completed. The IDIQ task orders consist of similar work that is currently undefined but will accommodate changes in the Center’s program, project, research and budget requirements over time.

The core elements section of this contract is work that is defined in this Statement of Work and will require support for multiple programs, projects, and offices concurrently. Examples of current programs, organizations, projects and project offices are the International Space Station (ISS) Utilization office, the NASA Astrobiology Institute, the NASA Lunar Science Institute, the NASA Aeronautics Research Institute, space biosciences, the Aeronautics Projects Office, Ames' proposal development services, the Ames History Office, the Ames Chief Scientist's office, the Ames Chief Technologist’s office, the New Ventures and Communications Office and other functional offices around the Center.

This contract requires the Contractor to provide management, personnel, equipment,

materials, and facilities, not otherwise provided by the Government, to meet the requirements described in this SOW. This contract requires the Contractor to provide management for the work to be performed, to assure the availability of qualified personnel for timely response to requirements, and to manage all requirements. The majority of the work will be performed on-site at NASA Ames with occasional support to be provided at other NASA Centers, principal investigator laboratories, other countries, and at such other locations as directed by the Contracting Officer.

3.0 APPLICABLE DOCUMENTS

The Contractor shall comply with all current NASA and Ames Procedural Requirements (APR) and Directives, including APR 7120.5 and NASA Procedural Requirements (NPR) 7120.5, APR 7120.7 and NPR 7120.7, and APR 7123.1 and NPR 7123.1.

4.0 REQUIREMENTS

4.1 OVERALL MANAGEMENT

NASA Ames has defined the contract management core requirement and technical core elements in this contract for the services and deliverables to be provided by the Contractor. The contract management core requirement shall provide overall management of the technical core and IDIQ technical requirements. The technical core elements have defined requirements, such as deliverables, significant milestone dates, cost/price, and established performance measurement criteria. Technical core elements may be deleted or modified as Agency, Center, programs or projects evolve. Future tasks and their deliverables may be added in the form of IDIQ task orders.

The Contractor shall:

4.1.1 Provide management and administrative functions necessary to manage and to track the labor hours, materials, and associated costs to perform the core elements and IDIQ task orders under this contract. This contract will require the simultaneous performance of many core elements.

4.1.2 Provide a management and administrative structure that provides a single point of contact for interface to the Contracting Officer (CO) and the Contracting Officer's Representative (COR). Provide procedures and management supervision to ensure compliance with applicable Government policies, regulations, and contractual requirements for all work performed under this contract. The Contractor shall provide a point of contact for each NASA element requester.

4.1.3 Provide overall management and oversight of all resources, facilitating the sharing of expertise across Ames' projects and programs in a matrixed fashion and ensuring that the proper resources are available and correctly allocated within and across the elements. The Contractor shall identify conflicting and/or complementary needs among core elements, and propose innovative and efficient ways of leveraging resources to ensure that conflicts are resolved and that needs are met.

4.1.4 Plan, manage, control, and coordinate all core elements under this contract and future IDIQ task orders as issued by the Contracting Officer; manage the resources allocated by NASA for specific elements in a manner to ensure project and management goals are reached in accordance with agreed upon milestones; and ensure that personnel assigned to elements have the training and expertise required for that element.

4.1.5 Attend relevant training, provided by the Government, as required for all on-site employees.

4.1.6 Ensure that the Government has adequate insight into the risks associated with the Contractor’s ability to accomplish tasks.

4.1.7 Provide property management to ensure accountability for installation-provided equipment and facilities and be responsible for annual inventory surveys and accountability verification forms.

4.1.8 Coordinate travel within specific core elements, as required, and travel, as needed, to conferences, field sites, universities, and other agencies in the performance of research, integration of products, technology development and infusion, and other important demonstration of results. All foreign travel by Contractors supporting NASA requirements must be completed following the policies and procedures of the Ames International Services Office and NFS 1852.242-71.

4.1.9 Acquire resources (equipment, supplies) as needed, not otherwise provided by the Government, to support the successful completion of all work.

4.1.10 Be prepared to adjust the staffing level to accommodate the actual workload, i.e., hire and/or lay off staff as required within a reasonable time frame.

4.2 SUPPORT REQUIREMENTS

This section describes the support requirements needed to sustain and enhance the ability to carry core elements from the onset of this contract through to successful

completion. The FILMSS Support Requirements Matrix (Exhibit A) is a sample of the core requirements that the Contractor will be required to provide across a variety of the core elements during the first year.

The support requirements are:

4.2.1 Program and Project Support

The Contractor shall develop program and project plans, provide expertise in team building, and provide planning, organizing, coordinating, monitoring, and managing projects including, but not limited to, the following:

a. Trade studies and analyses

b. Assessment of project feasibility

c. Assessment of technology readiness

d. Requirements analysis

e. System architecture design

f. Project implementation planning

g. Refinement of project requirements and specifications

h. Refinement of cost and schedule estimates and basis of estimates

i. Refinement of implementation plans

j. System design and development

k. Develop risk assessment and management plan

l. Configuration management

m. Tracking milestones, schedules, budgets, and performance measurements

n. Perform cost control, contract/subcontract financial management, and resource allocations

o. Support life-cycle review activities such as requirements reviews, Preliminary Design Reviews, Critical Design Reviews, Test Readiness Reviews, Flight Readiness Reviews, etc., and launch activities

p. Support for mission and systems operations and for mission closeout, analysis, documenting of lessons learned, and archiving

4.2.2 Spaceflight Project Support

The primary focus of this area is biosciences research. The Contractor shall:

a. Provide versatile and adaptable, multi-functional project teams for end-to-end support, from Pre-Phase A through Phases E/F activities for a range of space flight projects (see Definitions section).

b. Support development of full life cycle project documentation as required by NPR 7120.5

4.2.3 Virtual Communications and Collaboration Support

The Contractor shall:

a. Provide expertise and knowledge of the state of the art in collaboration technologies, periodically assess developments with respect to new tools and technologies, and advise NASA on their integration into the Center's, and particularly, the virtual institutes' tool-kits

b. Research and develop 3-D immersive environment tools for global collaboration and participation

c. Support application of this knowledge and expertise to enable collaborative science and technology development, science over distance, virtual field trips, and virtual world systems

d. Provide expertise in the social and organizational aspects of collaboration

e. Provide comprehensive support for Center and institute meetings, technology interchange meetings, and conferences, including virtual and on-line (videoconferencing) meetings

4.2.4 Science/Research Support

The Contractor shall:

a. Provide support for science teams, including research and technical administrative support for various activities, field experiments, laboratory investigations and databases; dissemination of research and education content; website maintenance and preparation of reports

b. Provide research support, including direct research functions and indirect support such as technical and programmatic reviews

c. Develop collaborative environments enabling remote scientific collaboration using up-to-date data visualization and modeling, social networking, and other tools

d. Recruit world-class scientific collaborators and experts in a wide range of disciplines to support the changing needs of rapidly evolving fields

e. Provide science and technical support for laboratory research, field research, and flight research

f. Support development of and compliance with ethical standards for research, including bioethics for human and animal research subjects, planetary sustainability, and synthetic biology

4.2.5 Hardware and Technology Development Support

The Contractor shall:

a. Support laboratory and prototype hardware development and demonstration from concept through operations

b. Support the development of innovative technologies, including advanced manufacturing, space biotechnology, operating systems, payloads, sensors, micro- and small-satellites, and architectures

c. Support overall planning, formulation, and implementation of technology projects, tasks and other efforts

d. Support requirements analysis/technology assessment and monitoring, and trade studies, and their integration into optimal technology planning and investment strategies and into hardware and technology development projects

e. Support special studies leading to the creation of innovative approaches toward technology development and collaborations

4.2.6 Innovative Partnerships Support

The Contractor shall:

a. Identify and promote development of innovative collaborations with respect to scientific research, technology development, technology transfer (e.g. licensing, software release etc.), and proposal development

b. Enhance opportunities to develop business partnerships, institute consortiums, and support transfer of technology to and from industry

c. Support the development of the US commercial space industry, including the commercial use of suborbital, orbital, and deep space locations

d. Identify mechanisms to support growth of the commercial space industry

4.2.7 Strategic Planning & Analysis Support

The Contractor shall:

a. Assist Ames leadership with strategic planning and analysis in various functional areas, including the development of white papers and market surveys

b. Monitor, track and support databases for portfolio management and collaborative awareness processes through, for example, the Ames New Pursuits Registry

c. Characterize workforce and capabilities of the Ames Research Center through documents, such as the Ames “Center at a Glance” document

4.2.8 Proposal Development Support

The Contractor shall:

a. Support efforts to develop and improve Ames proposal processes and proposal submission outcomes for both NASA and non-NASA opportunities

b. Provide technical editing, graphics and administration of such tasks

c. Support the development of a dashboard tool that provides a clear and informative overview of all competitive proposals for which Ames can submit. The tool shall include actual and expected announcements of opportunity (AO), current and open AOs with details of their status,

organization leads, principal investigators (PIs), funding levels, etc., and closed AOs with details of their status, expected award announcements, etc.

d. Provide database solutions and proposal development support that contains information on partnership development and technology transfer

e. Identify solutions and tools to store, access, and characterize proposal data

4.2.9 Solicitations Support

The Contractor shall:

a. Prepare documentation in support of Ames-managed solicitations, e.g., NASA Research Proposals

b. Support the development and evaluation of proposals submitted to Ames-managed opportunities

c. Support the peer review process including, but not limited to: preparing science and technical summary packages that may include information on background, scientific rationale and relevance, proposer qualifications, flight/technical experience, results, and references

4.2.10 Education and Public Outreach Support

The Contractor shall:

a. Develop, implement and update program or project public affairs plans, including production of detailed media plans specifying activities and products coinciding with significant mission milestones, events, and scientific discoveries

b. Develop and disseminate Ames program and project information, services and products with the goal of informing the science and education communities, the media, and the public of achievements and opportunities for participation

c. Develop science, research, educational and outreach tools, such as websites, newsletters, brochures, videotapes, compact disks, apps, displays, and kindergarten through 12th grade educational/classroom materials

d. Support the Ames Academy for Space Exploration through outreach; review and selection of student participants; identification of mentors; and general implementation of the program

e. Coordinate and participate in outreach events, such as scientific meetings and education conferences

f. Coordinate all program and project EPO activities with the Ames Strategic Communications and/or the Education/Public Outreach Offices; also ensure that activities are consistent with NASA Headquarters EPO policies

4.2.11 Workshop, Meeting and Conference Support

The Contractor shall:

a. Provide comprehensive support for program and project meetings, workshops, conferences, reviews, briefings, and technology interchange meetings

b. Develop websites and other promotional materials, develop and distribute workshop/meeting materials, manage all meeting operations, record minutes or notes, escort VIPs, arrange for foreign national participation, and assemble all meeting documents for the event and for distribution following the event

4.2.12 Data, Document Management and Archival Support

The Contractor shall:

a. Prepare documents, such as technical papers, reports, proposals, brochures, and newsletters in both printed and digital formats

b. Provide technical writing and editing, including word processing, illustration, and preparation of new text and graphics, editing functions for revising and updating documents, and coordinating the physical production and distribution of documents

c. Establish and maintain project operational and documentation databases, including requirement traceability

d. Collect, maintain, analyze, and disseminate data from operational scientific missions

e. Provide data analysis and archival services

f. Provide integration of information and data

g. Provide mapping areas of expertise and capabilities to each other and to proposal development

4.2.13 Subject Matter Expert Support

The Contractor shall provide experts, as needed, in any of the disciplines covered by the contract to assist with design of experiments, conduct of research, review of proposals being submitted to Ames, review of proposals being submitted by Ames, and any other activity requiring expert assistance, either on a short- or long-term basis

5.0 PHASE-IN AND PHASE-OUT

5.1 PHASE-IN

5.1.1 The Contractor shall accomplish the phase-in process as expeditiously as possible, with a maximum phase-in period of 60 days

5.1.2 The incoming Contractor shall provide qualified Contractor personnel by the end of the phase-in period

5.2 PHASE-OUT

5.2.1 Upon completion of this contract, the outgoing Contractor shall provide for the orderly transfer of duties and records to the incoming Contractor

5.2.2 The Contractor shall accomplish the phase-out process in an expeditious manner consistent with any contract phase-in schedule, while minimally impacting ongoing task orders

5.2.3 The Contractor shall submit a phase-out plan no later than 60 days before the end of the contract for Government review and approval

6.0 ACRONYMS

AMS	Ames Management System
AO	Announcement of Opportunity

APR	Ames Procedural Requirements
ARC	Ames Research Center
CDR	Critical Design Review
CO	Contracting Officer
COR	Contracting Officer's Representative
EPO	Education and Public Outreach
FILMSS	Fully Integrated Lifecycle Mission Support Services
FRR	Flight Readiness Review
HRIRB	Human Research Institutional Review Board
ISS	International Space Station
KDP	Key Decision Point
MCR	Mission Concept Review
MDR	Mission Definition Review
NAI	NASA Astrobiology Institute
NAR	Non-Advocate Review
NARI	NASA Aeronautics Research Institute
NASA	National Aeronautics and Space Administration
NLSI	NASA Lunar Science Institute
NPD	NASA Policy Directive
NPR	NASA Policy Regulation
OPHRP	Officer for the Protection of Human Research Participants
PDR	Preliminary Design Review
PI	Principal Investigator
R&D	Research & Development
SDR	System Definition Review
SIR	System Integration Review
SRR	System Requirements Review
SOW	Statement of Work
TRL	Technology Readiness Level
VIP	Very Important Person
WYE	Work-Year-Equivalent

7.0 PROJECT LIFECYCLE PHASES

7.1 PRE-PHASE A (CONCEPT PHASE)

During Pre-Phase A, a pre-project team studies a broad range of mission concepts that contribute to program and Mission Directorate goals and objectives. These advanced studies, along with interactions with customers and other potential stakeholders, help the team to identify promising mission concept(s) and draft project-level requirements. The team also identifies potential technology needs (based on the best mission

concepts) and assesses the gaps between such needs and current and planned technology readiness levels. These activities are focused toward a Mission Concept Review (MCR) and Key Decision Point (KDP) A.

7.2 PHASE A (CONCEPT & TECHNOLOGY DEVELOPMENT)

During Phase A, a project team is formed to fully develop a baseline mission concept and begin or assume responsibility for the development of needed technologies. This work, along with interactions with customers and other potential stakeholders, helps with the baselining of a mission concept and the program requirements on the project. These activities are focused toward System Requirements Review (SRR) and System Definition Review (SDR/PNAR) (or Mission Definition Review (MDR/PNAR)). The SRR and SDR/PNAR (or MDR/PNAR) process culminates in KDP B.

7.3 PHASE B (PRELIMINARY DESIGN & TECHNOLOGY COMPLETION)

During Phase B, the project team completes its preliminary design and technology development. These activities are focused toward completing the Project Plan and Preliminary Design Review (PDR)/Non-Advocate Review (NAR). The PDR/NAR process culminates in KDP C.

7.4 PHASE C (FINAL DESIGN AND FABRICATION)

During Phase C, the project completes the design that meets the detailed requirements and begins fabrication of test and flight article components, assemblies, and subsystems. These activities focus on preparing for the Critical Design Review (CDR) and the System Integration Review (SIR). This phase culminates in KDP D.

7.5 PHASE D (SYSTEM ASSEMBLY, INTEGRATION AND TEST, AND LAUNCH)

During Phase D, the project performs system assembly, integration, and test. These activities focus on preparing for the Flight Readiness Review (FRR). This phase culminates in KDP E.

7.6 PHASE E (OPERATIONS AND SUSTAINMENT)

During Phase E, the project implements the Missions Operations Plan developed in previous phases. This phase culminates in KDP F.

7.7 PHASE F (CLOSEOUT)

During Phase F, the project implements the Systems Decommissioning/Disposal Plan developed in Phase E, and performs analyses of the returned data and any returned samples.

	1	2	3	4	5	6	7	8	9	10	11	12	13
FILMSS Support Requirements Matrix	**Space Biology**	**Space Biosciences Division**	**Kepler**	**Virtual Institute: NASA Astrobiology Institute**	**Virtual Institute: NASA Lunar Science Institute**	**Virtual Institute: NASA Aeronautics Research Institute**	**Aeronautics Projects**	**Strategic Management & Analysis Division**	**New Opportunities Center**	**Ames History Office**	**Office of Chief Scientist**	**Office of Protection of Human Research Participants**	**Ames Management System Support**
Program & Project Support			CORE	CORE	CORE		CORE	CORE	CORE				CORE
Spaceflight Project Support	CORE		CORE										
Virtual Com & Collab Support				CORE	CORE	CORE	CORE						
Science/Research Support		CORE		CORE	CORE							CORE	
Hardware & Tech Dev Support		CORE	CORE	CORE	CORE								
Innovative Partnerships Support		CORE		CORE	CORE		CORE						
Strat Planning & Analysis Support		CORE						CORE	CORE			CORE	
Proposal Development Support		CORE						CORE	CORE				
Solicitations Support				CORE	CORE	CORE							
Educ & Public Outreach Support		CORE	CORE	CORE	CORE		CORE			CORE			
Workshop, Meeting, Conf Support		CORE		CORE	CORE	CORE	CORE			CORE	CORE		
Data, Doc Mgmt & Archival Support		CORE	CORE				CORE			CORE	CORE		CORE
Subject Matter Expert Support				CORE	CORE								
ESTIMATED CORE FOR FIRST YEAR - SUBJECT TO CHANGE													